

UNCLASSIFIED

FY 2000 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1999

BUDGET ACTIVITY: 3

PROGRAM ELEMENT: 0603727N

PROGRAM ELEMENT TITLE: Joint Experimentation

PROJECT NUMBER & TITLE	FY 1998 ACTUAL	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	FY 2004 ESTIMATE	FY 2005 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
R2497 Joint Warfighting Experimentation										
	*8,761	**30,000	41,840	46,181	52,257	62,435	62,783	63,229	CONT.	CONT.
TOTAL	*8,761	**30,000	41,840	46,181	52,257	62,435	62,783	63,229	CONT.	CONT.

*Was executed in Program Element 0603727D8Z in FY 1998.

**\$14,100 is being executed in OSD P.E. 0603727D8Z and 0208049J in FY 1999.

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Chairman of the Joint Staff's Joint Vision (JV) 2010, the Services' 21st Century visions and the Revolution in Military Affairs (RMA) all stress the critical role technology will play in achieving full spectrum force dominance. On 15 May 1998 the Secretary of Defense appointed the Command in Chief, United States Atlantic Command (CINCUSACOM) as the Department of Defense Executive Agent for Joint Experimentation effective 1 October 1998. This program element directly supports that initiative. New operational concepts, doctrine, organizations, and training enabled by technology will need to be explored and experimented with to understand the new capabilities needed to achieve the next century's military objectives. This program element provides funding to begin developing, analyzing and experimenting with those concepts. The program element funds three separate but related efforts: a Joint Advanced Warfighting/Revolution in Military Affairs (JAW/RMA) analysis activity, a transition activity, and a Joint Warfighting Experimentation program. The JAW/RMA activity will meet the need for analytical support for the development of candidate Joint Vision 2010 and RMA advanced systems and joint warfighting concepts. This capability, which will include advanced simulation and analysis tools, will provide the catalyst for joint warfighting hypotheses based on revolutionary and evolutionary joint warfighting concepts enabled by advanced technologies.

(U) The Joint Warfighting Experimentation program funds the field experiments and supporting simulation to evaluate potential systems and concepts and their contribution toward achieving the JV 2010 and RMA objectives. It provides the capability to rapidly incorporate new and emerging systems with advanced concepts, doctrine, organizations, and technology, and experiment

R-1 Line Item 25

Budget Item Justification
(Exhibit R-2, page 1 of 11)

UNCLASSIFIED

UNCLASSIFIED

FY 2000 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1999

BUDGET ACTIVITY: 3

PROGRAM ELEMENT: 0603727N

PROGRAM ELEMENT TITLE: Joint Experimentation

with them to prove their value. Initially, this effort will be focused on the development and execution of Information Superiority experiments which will be fundamental to achieving Dominant Maneuver (DM), Precision Engagement (PE), Full Dimensional Protection (FDP) and Focused Logistics (FL). The Advanced Battlespace Information System (ABIS) Task Force produced the most comprehensive assessment, vision and strategy to date for achieving the requisite grid, technologies, and concepts to make JV 2010 possible. The 1998 edition of the Joint Warfighting Science and Technology Plan (JWSTP) provided to Congress in compliance with the Fiscal Year 1997 Defense Authorization Act (Section 270) presents the technology investment plan consistent with JV 2010 and the ABIS recommendations. The JWSTP defines and maps the requisite technology development and advanced concept technology demonstrations to enable Information Superiority. The effort funded in this program element enables the joint warfighter and evolving Federated Joint Battle Laboratory to work as an integrated team with the objective to experiment with and quantify the impact of information technologies and concepts, along with commercial off the shelf (COTS) and government off the shelf (GOTS) products and to co-evolve organization and doctrine to optimize the Joint and Service Warfighting mission. We will establish and deploy this integrated environment with COTS hardware and existing software (COTS, GOTS, and applications), incurring minimal cost in set-up and operation.

(U) Industry has recognized that business processes must be changed to take full advantage of new information technologies. Lessons learned from earlier service experiments point out the importance of having a firm conceptual basis upon which to build experiments. In order to develop non-parochial revolutionary concepts, we have established the Joint Advanced Warfighting Program (JAWP). This organization of senior civilian and military people support Atlantic Command (ACOM), the Joint Staff, and the Office of the Secretary of Defense.

(U) The joint experiments will be very dependent on advanced distributed simulation or on limited live command post exercises that are being driven by simulations. Therefore, it is critical the Defense Modeling and Simulation Office (DMSO) insure that the simulations that are being developed are consistent with the department's long term simulation goals. Distributed simulations also require a robust network to interconnect the various sites. Often times, these simulations press the state of the art in networking capability. To support joint experiments and other bandwidth intensive applications such as video teleconferencing and high definition television, an Information Technology Backplane (ITB) has been established. The ITB is a virtual network capitalizing on existing physical networks such as the Defense Information System Network (DISN), the Defense Information Systems Agency (DISA)-Defense Advanced Research Project Agency (DARPA) Leading Edge Services Network, and the experimental ATD net. The 21st Century Challenges roadmaps prepared by the Joint Staff identify a number of existing

R-1 Line Item 25

Budget Item Justification
(Exhibit R-2, page 2 of 11)

UNCLASSIFIED

UNCLASSIFIED

FY 2000 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1999

BUDGET ACTIVITY: 3

PROGRAM ELEMENT: 0603727N

PROGRAM ELEMENT TITLE: Joint Experimentation

technical efforts that have the potential to feed joint experiments. These resources provide the means to change the scope of a technical demonstration to support experiments.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is budgeted within the ADVANCED TECHNOLOGY Budget Activity because it encompasses design, development, simulation, or experimental testing or prototype hardware to validate technology feasibility and concept of operations and reduce technological risk prior to initiation of a new acquisition program or transition to an ongoing acquisition program.

(U) This program element is in direct response to the FY 1997 Authorization Act Report 104-267, which calls for "...a process to ensure that the emerging long-term visions of each of the Services will be melded into an affordable, coordinated series of operational concepts that will drive the JWSTP developed in the office of the Director, Defense Research and Engineering (DDR&E)." and FY 1998 Authorization Act Report 105-29 requests a Joint Experimentation Plan to address: "how the fielding of advanced technologies are being synchronized across the military services" and "...how Command, Control, Communications, and Computers (C4) and Intelligence, Surveillance and Reconnaissance (ISR) capabilities are being integrated jointly to achieve information superiority." The National Defense Authorization Act for Fiscal Year 1999 (105-261) directed the Secretary of Defense to implement a "process of joint experimentation to investigate and test technologies and alternative forces and concepts in field environments."

B. (U) PROGRAM CHANGE FOR TOTAL Program Element:

	FY 1998	FY 1999	FY 2000
FY 1999 President's Budget	*8,761	0	0
Adjustments from FY 1999 President's Budget	0	**30,000	41,840
FY 2000 President's Budget Submission	*8,761	**30,000	41,840

R-1 Line Item 25

Budget Item Justification
(Exhibit R-2, page 3 of 11)

UNCLASSIFIED

UNCLASSIFIED

FY 2000 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1999

BUDGET ACTIVITY: 3

PROGRAM ELEMENT: 0603727N

PROGRAM ELEMENT TITLE: Joint Experimentation

* Was executed in Program Element 0603737D8Z in FY 1998.

**\$14,100 is being executed in OSD P.E. 0603727D8Z and 0208049J in FY 1999.

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1999 adjustments reflect \$14,100 being executed in OSD P.Es 0603727D8Z, and 0208049J, and an above threshold reprogramming of \$15,900. FY 2000 adjustments reflect transfer of funds and responsibility for this program from OSD (+\$42,445); and Non Pay Inflation adjustment (-\$605).

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

R-1 Line Item 25

Budget Item Justification
(Exhibit R-2, page 4 of 11)

UNCLASSIFIED

UNCLASSIFIED

FY 2000 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1999

BUDGET ACTIVITY: 3

PROGRAM ELEMENT: 0603727N

PROGRAM ELEMENT TITLE: Joint Experimentation

PROJECT NUMBER & TITLE	FY 1998 ACTUAL	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	FY 2004 ESTIMATE	FY 2005 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
R2497 Joint Warfighting Experimentation	*8,761	**30,000	41,840	46,181	52,257	62,435	62,783	63,229	CONT.	CONT.

* Was executed in Program Element 0603727D8Z in FY 1998.

**\$14,100 is being executed in OSD P.E. 0603727D8Z and 0208049J in FY 1999.

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Chairman of the Joint Staff's Joint Vision 2010, the Services' 21st Century visions and the Revolution in Military Affairs (RMA) all stress the critical role technology will play in achieving full spectrum force dominance. New operational concepts, doctrine, organizations, and training enabled by technology will need to be explored and experimented with to understand the new capabilities needed to achieve the next century's military objectives. This program element provides funding to begin developing, analyzing and experimenting with those concepts. The program element funds three separate but related efforts: a Joint Advanced Warfighting/Revolution in Military Affairs (JAW/RMA) analysis activity, a transition activity, and a Joint Warfighting Experimentation program. The JAW/RMA activity will meet the need for analytical support for the development of candidate Joint Vision 2010 and RMA advanced systems and joint warfighting concepts. This capability, which will include advanced simulation and analysis tools, will provide the catalyst for joint warfighting hypotheses based on revolutionary and evolutionary joint warfighting concepts enabled by advanced technologies

R-1 Line Item 25

Budget Item Justification
(Exhibit R-2, page 5 of 11)

UNCLASSIFIED

UNCLASSIFIED

FY 2000 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1999

BUDGET ACTIVITY: 3

PROGRAM ELEMENT: 0603727N

PROJECT NUMBER: R2497

PROGRAM ELEMENT TITLE: Joint Experimentation

PROJECT TITLE: Joint
Experimentation

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1998 ACCOMPLISHMENTS:

(U) In FY 1998 this program was funded by PE 0603727D8Z Office of Under Secretary of Defense OUSD (Acquisition and Technology (A&T)) Joint Warfighting program. A joint effort had been established among the Office of the Secretary of Defense (OSD), Joint Staff, Joint Battle Center, Joint Warfighting Center, Joint Warfare Analysis Center, Services and Agencies led by the Director, Defense Research & Engineering (DDR&E), J6 and J7. A detailed roadmap of a series of experiments was developed which supports information superiority as well as the four operational capabilities of Dominance Maneuver (DM), Precision Engagement (PE), Focused Logistics (FL), and Full Dimensional Protection (FDP). The roadmap documents the flow of these experiments so that later initiatives build upon previous lessons learned. Joint warfighters and acquisition personnel will experiment with both operational concepts and technologies in order to determine improved operational capabilities via field experiments, system integration laboratory efforts, modeling, simulation, visualization, or other techniques. A management and test plan will be initiated for the first Joint Warfighting Experiment (JWE) to be conducted as an embedded experiment in a joint training exercise in the year 2000 to determine progress, improve advanced joint warfighting concepts and evolve future operational architectures.

(U) (\$1,500)

(U) The Joint Advanced Warfighting Program (JAWP) was established in April 1998. The JAWP works with Office of the Secretary of Defense (SECDEF), the Joint Staff, the United States Atlantic Command (USACOM) and their subordinate activities in support of Joint Vision 2010 implementation and have: (1) identified key elements of the joint warfighting experimentation process; (2) developed prototype experimentation plans; and (3) conducted research and seminars to classify notable works on future operational concepts and future security environments that are relevant to joint experimentation.

(U) (\$3,605)

(U) The Joint Experimentation Program got off to a successful start in FY 1998 culminating with Information Superiority Experiment 1.1. Leveraging the U. S. Air Force Expeditionary Force Experiment (EFX-98), USACOM working in

R-1 Line Item 25

Budget Item Justification
(Exhibit R-2, page 6 of 11)

UNCLASSIFIED

UNCLASSIFIED

FY 2000 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1999

BUDGET ACTIVITY: 3

PROGRAM ELEMENT: 0603727N

PROJECT NUMBER: R2497

PROGRAM ELEMENT TITLE: Joint Experimentation

PROJECT TITLE: Joint
Experimentation

concert with the Joint Staff J-6, tested and assessed time critical targeting sensor-to shooter technologies, applications, doctrine and concepts. The experiment utilized modeling and simulation events in the development of primary and alternative hypotheses prior to experimentation in a live environment. Analysis of data is ongoing and will be concluded in FY 99. Additionally, advanced planning and modeling and simulation activities have begun for USACOM Joint Experiment-1 (JE-1). JE-1 is a preliminary event required to support other joint experiments and will eventually lead to a future "Olympic Event" (OE-1) that will generate empirical data, supporting this effort. JE-1 will be conducted 4th quarter FY 99.

(U) (\$956)

(U) Information Technology (IT) Backplane compliant with the Joint Technical Architecture, and the Advanced Battlespace Information Structure (ABIS) were integrated and put in place, thereby providing an environment of existing information technology components into which prototype and other emerging products can be inserted, exercised and evaluated with respect to interoperability and joint warfighting potential. The IT Backplane builds on existing networks and complements, not duplicates, similar efforts by Defense Information System Agency (DISA), Defense Advance Research Project Agency (DARPA), and Naval Research Laboratory (NRL).

(U) (\$2,700)

Extended emerging network protocols to the IT Backplane. These included Asynchronous Transfer Mode (ATM) Local Area Network Emulation (LANE) and Multiple Protocol Over ATM (MPOA). Began work in a number of technical areas: (1) mapping legacy application flows to ATM traffic types such as Constant Bit Rate (CBR) and Variable Bit Rate (VBR) to achieve desired performance through Quality-of-Service (QoS); (2) measuring data flows to automatically trigger Virtual Circuit (VC) shortcuts to eliminate traffic bottlenecks; (3) developing JAVA-based Private-Network-to-Network Interface (PNNI) topology mapping to update the network state; (4) investigating dynamic path allocation to improve call-setup performance; and (5) implementing end-to-end authentication of assets using security protocols based on Kerberos Version. Began to evaluate and further develop single-protocol network devices such as Voice-Over-ATM (VOA) telephony workstations and hubs. Support was given to USACOM to provide input to their implementation plan and advise on internal network design as well as developing future IT backplane requirements to meet Joint Experimentation objectives identified by Atlantic Command (ACOM). These study activities will determine bandwidth requirements,

R-1 Line Item 25

Budget Item Justification
(Exhibit R-2, page 7 of 11)

UNCLASSIFIED

UNCLASSIFIED

FY 2000 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1999

BUDGET ACTIVITY: 3

PROGRAM ELEMENT: 0603727N

PROGRAM ELEMENT TITLE: Joint Experimentation

PROJECT NUMBER: R2497

PROJECT TITLE: Joint
Experimentation

hardware requirements, and assess future technology to support joint experiments.

2. (U) FY 1999 PLAN:

(U) (\$14,980)

The FY 99 objectives will be laid out in the USACOM Joint Experimentation Campaign Plan 99 (CPLAN 99). The Campaign provides a methodology for laying out a schedule and implementation plan for identified subjects to be considered in future Joint Warfighting Experiments. The events chosen for the first full year of the Joint Warfighting program will evaluate the technologies and means to validate the Desired Operational Capabilities (DOCs) identified in the Joint Vision 2010 Implementation plan. Additionally the planned activities will focus on identifying Future Operational Capabilities (FOCs) which will be critical to Joint Warfighting. These experiments are product of a future warfighting Concepts Conference which was sponsored by USACOM in October 1998. This conference attended by Battle Laboratory representatives from all the services, the Joint Staff and Unified CINCs nominated 46 future warfighting experiments. USACOM subsequently identified 8 concepts which are schedule for initiation in FY 99. These concepts will leverage on going service demonstrations/experiments, ACTDs and ATDs. They will include experiments which evaluate the following concepts: Attack Operations Against Critical Military Targets, Future Collaborative Information Environment, Joint Contingency Force Operations, Focused Logistics, Common Relevant Operational Picture, Adaptive Joint Command and Control, Interoperable Combat ID and Surveillance and Fires From Space. These eight concepts will form the basis of the experimentation process USACOM will initiate in FY99. This effort has also supported the independent assessment of the Joint Advanced Warfighting Program (JWAP). The results from JWAP have been considered by and integrated into the overarching USACOM Joint Experimentation program.

(U) (\$2,849) Expansion of the on going technical work development of the Information Technology Backplane (ITB). Particular attention will be paid to linking the capabilities of several ACTDs including joint logistics, joint planning, rapid battlespace visualization, battlefield awareness data dissemination and Synthetic Theatre of War (STOW). Support will be given to implementers at USACOM and the individual Military Services to assist in the design and execution of information superiority and warfighting experiments.

R-1 Line Item 25

Budget Item Justification
(Exhibit R-2, page 8 of 11)

UNCLASSIFIED

UNCLASSIFIED

FY 2000 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1999

BUDGET ACTIVITY: 3

PROGRAM ELEMENT: 0603727N

PROJECT NUMBER: R2497

PROGRAM ELEMENT TITLE: Joint Experimentation

PROJECT TITLE: Joint
Experimentation

(U) (\$3,050)

Experimentation Feeder Support: Experimentation Feeder Support provides resources to ensure that the joint experimentation program is consistent with the high level architecture and Defense Modeling and Simulation Office (DMSO's) simulation roadmap and existing on-going demonstrations with the potential for enhancing military operational capability or cost effectiveness to participation in joint experiments.

(U) (\$9,121)

The USACOM Joint Experimentation Implementation Plan (I-Plan) dated 14 July 98 is CINCUSACOM's concept and plan for executing the SECDEF Charter for Joint Experimentation. It establishes the experimentation process and describes how USACOM will task organize to accomplish the mission. Leveraging existing resources and work accomplished by the Joint Staff and Joint Warfighting Center, USACOM's FY 99 experimentation focus will be to test and subsequently refine the "Proof of Concept" envisioned for the experimentation process by conducting Joint Experiment Number 1 (JE-1). JE-1 will test emerging concepts and joint doctrine by utilizing advanced simulations, virtual environments, and wargames. In concert with JE-1, USACOM will host a "Futures Program" consisting of workshops, seminars and symposiums as part of the experimentation process. The Futures Program will explore future Doctrine, Organization, Training and Education, Materiel, Leadership, People (DOTML-P) issues by reviewing emerging technologies and concepts that support doctrine, organizations, training, materiel, leadership and people by bringing together warfighters, futurists, academics, and industry. The Futures Program will explore use of wargames, modeling and simulation and virtual environments in developing future concepts for experimentation. JE-1 and the Futures Program will leverage the existing Information Technology (IT) Backplane to conduct experiments. However, it is envisioned that robust experimentation will require continued development of the existing IT Backplane capabilities.

3. (U) FY 2000 PLAN:

(U) (\$30,740) This funding will support continued activities by USACOM as the Executive Agent for Joint Experimentation in the execution and assessment of two USACOM generated Joint Warfighting Experiments, five Major Leveraged Military

R-1 Line Item 25

Budget Item Justification
(Exhibit R-2, page 9 of 11)

UNCLASSIFIED

UNCLASSIFIED

FY 2000 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1999

BUDGET ACTIVITY: 3

PROGRAM ELEMENT: 0603727N

PROJECT NUMBER: R2497

PROGRAM ELEMENT TITLE: Joint Experimentation

PROJECT TITLE: Joint
Experimentation

Service events and seven Minor Leveraged Military Service experiments and demonstrations. Additionally USACOM will continue to sponsor the ongoing series of Future Seminars and Warfighter reviews of technologies and operational concepts, which examine the developments and prospects for technological innovation and their relationships to mid-term and future operational concepts. USACOM will also sponsor other technological-operational concept development studies and required Red Team technology vulnerability assessments. Specific experimental technologies which are relevant to the operational issue, including prototypes, advanced technologies, surrogates and required integration materials will be used to support these integration efforts. Modeling and simulation and wargames will continue to be an integral element of the FY 00 plan to develop, assess and generate new concepts and identify new technologies suitable for experimentation.

(U) (\$8,600) Coordination of scheduled Joint Experimentation initiatives with the results of scheduled Military Service warfighting experiments and concept demonstrations and those of other Unified CINCs. This will include identification and inclusion of relevant Military Service and Defense Agency science and technology initiatives which might support USACOM's overarching experimentation process.

(U) (\$2,500) Advanced planning and support for development and coordination of scheduled FY 01 and FY 02 experiments will be conducted in parallel with on going FY 00 experiments.

(The growth between FY 99 and FY 00 is the result of the increased number of Joint Experiments and the coordination with the associated service and other Unified CINC experiments and demonstrations.

C. (U) OTHER PROGRAM FUNDING SUMMARY: Not applicable.

(U) RELATED RDT&E:

- (U) PE 0601153N Defense Research Sciences
- (U) PE 0602111N Air and Surface Launched Weapons Technology
- (U) PE 0602121N Ship, Submarine and Logistics Technology

R-1 Line Item 25

Budget Item Justification
(Exhibit R-2, page 10 of 11)

UNCLASSIFIED

UNCLASSIFIED

FY 2000 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1999

BUDGET ACTIVITY: 3

PROGRAM ELEMENT: 0603727N

PROJECT NUMBER: R2497

PROGRAM ELEMENT TITLE: Joint Experimentation

PROJECT TITLE: Joint
Experimentation

- (U) PE 0602122N Aircraft Technology
- (U) PE 0602232N Communications, Command and Control, Intelligence, Surveillance and Reconnaissance (C3ISR)
- (U) PE 0602233N Human Systems Technology
- (U) PE 0602234N Materials, Electronics and Computer Technology
- (U) PE 0602270N Electronic Warfare Technology
- (U) PE 0602314N Undersea Warfare Surveillance Technology
- (U) PE 0602435N Oceanographic and Atmospheric Technology
- (U) PE 0602633N Undersea Warfare Weapon Technology
- (U) PE 0603750D Advanced Concept Technology

D. (U) SCHEDULE PROFILE: Not applicable.

R-1 Line Item 25

Budget Item Justification
(Exhibit R-2, page 11 of 11)

UNCLASSIFIED